Part 2
NASA Glenn Research Center Cleveland

By comparison NASA's Glenn Research Station in Cuyahoga County and adjacent to Cleveland Hopkins Airport is smaller, considerably more developed resulting in a limited area of habitat suitable for bat usage. The ravine formed by Abram Creek with its slopes of mature forest including Eastern Hemlock, Oak, Maple and Beech trees provides a suitable corridor for foraging and potential roosting sites for bats.

The age, level of usage and construction of the buildings did not provide for roosting sites for bats. Open spaces were neatly mowed thus not suitable as foraging sites or collecting sites. The high level of human and machine activity from the Center and adjacent airport all added to the limited usability for bats.

Because the Center had an Indiana Bat survey conducted in 1999. It was decided that effort would not be as great as originally proposed and be focused in the area north of the previous survey. This sampling area included the Abram Creek ravine from the West Area Road south to near the junction of Cedar Point and Creek Roads and the upland forest sites adjacent to it.

SURVEY METHODOLOGY

Fieldwork was conducted on four occasions, a visual inspection on June 12, and sampling on June 22, July 31 and August 25 2001. The survey methodology was similar to that for Plum Brook except no radio-telemetry was incorporated.

On site Interviews consisted of being given a tour of the Center by Richard Kalynchuk and talks with guards at the gate house.

Visual evaluation of the site was conducted with Richard Kalynchuk on June 12 and also the afternoon of June 22. Potential roost and foraging sites were identified and net sites selected.

Acoustic Monitoring was ongoing each collection night. This was done the entire length of Abram Creek in the study area, the adjacent wooded ridges, around the buildings and at the Rocket Engine Test Facility

Age, sex and Reproductive Assessment was as described above in the Plum Brook section.

Mist Netting was done on June 22, July 31 and August 25 at eight sites **(Figure 34)** and followed the same protocol as described in the Plum Brook section. Net patterns include single nets in a series, double and triple canopy net sets. Net size and type were as described in the Plum Brook section.

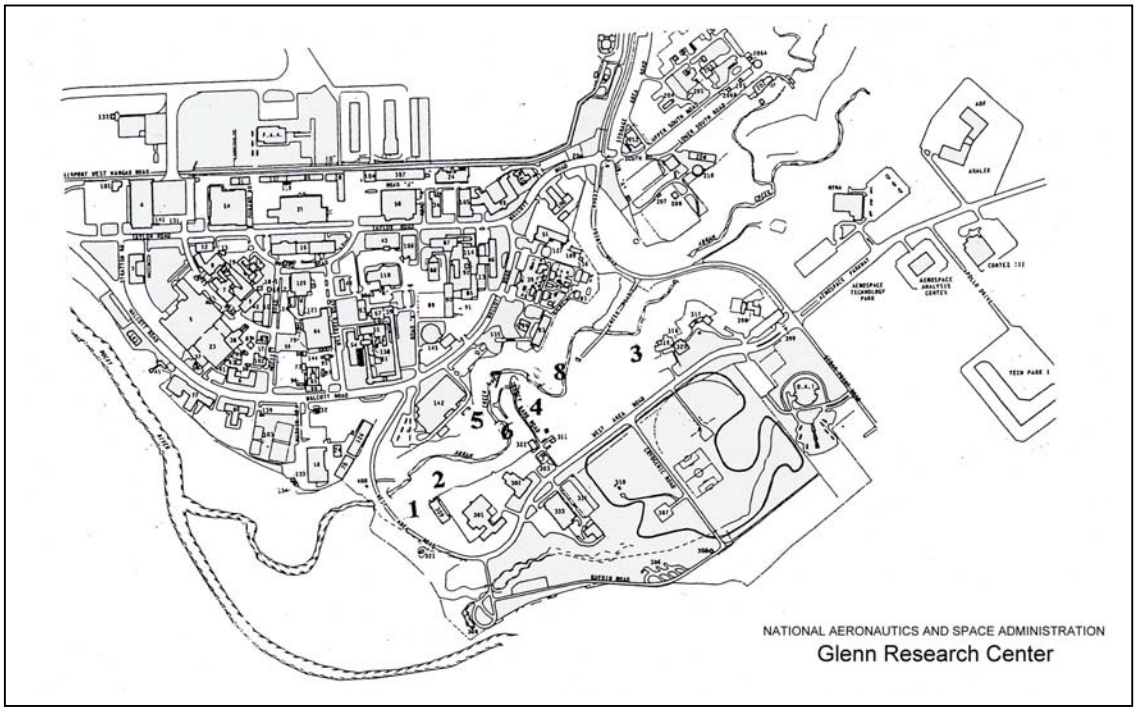

Figure 34; Mist net sites at NASA Glenn Research Center Cleveland, Ohio.

RESULTS

On Site Interviews assisted in gaining access to Abram Creek and locating the few older structures on the Center.

Visual Examination resulted in selecting the following net sites:

Site 1; A double canopy in the wooded ridge top northeast of Space Power Research Laboratory Bldg. 309.

Site 2; Two single nets in a series along the wooded ridge top east of Space Power Research Laboratory, Bldg. 309.

Site 3; Two single nets in a series along the wooded ridge top east of Substation "N", Bldg. 319.

Site 4; Two single nets in a series at the base of the wooded hill side and just east of Duct Bank Road.

Site 5; A double canopy in the woods along Abram Creek and just below Research Analysis Center Bldg. 142.

Site 6; A double canopy across Abram Creek 50 feet down stream of the pipe crossing over Abram Creek and net site 5.

Site 7; Two single nets parallel to each other across Abram Creek 200 feet upstream of the pipe crossing Abram Creek.

Site 8; A triple canopy across Abram Creek 300 yards upstream of site 7.

Acoustic Monitoring June 22 did not pick any sounds of foraging bats. The areas checked throughout the sampling period (9:00pm to 1:30am) included each net site,

the full stretch of Abram Creek in the sample section. Also monitored were the areas in and around the Rocket Engine Test Facility and Bldg. 77, Instrument Research Lab.

On July 31 a *Myotis* species was heard in the vicinity of Net Site 7 at 8:55pm. At 9:10 a Red Bat, *Lasiurus borealis* was heard and seen flying over Abram Creek at Net Site 6. At 10:50pm a Big Brown Bat, *Eptesicus fuscus* was detected and viewed with flashlight at the Rocket Engine Test Facility Bldg. 202.

On August 25 Bats were heard foraging along Duct Bank Road at 8:45, 9:10 and 10:10pm. At 10:55pm a bat was detected acoustically along Abram Creek 40 feet downstream of Net Site 8.

Mist Netting for the three nights had a combined total of 233.75 net/hours for the eight Mist Net Sites. The June and July nights did not capture any bats. August 25 Two bats were captured, both at Net Site 8. At 11:00pm a female juvenile Little Brown Bat, *Myotis lucifugus* was captured. At 11:05pm a male Red Bat, *Lasiurus borealis* was captured but escaped before it could be aged. He was caught in the upper panel of the triple canopy net and chewed his way out before the net was completely lowered. *Note he was sexed by pelage and with the dullness of the color it was probably a juvenile.

The Little Brown Bat was banded with MT 1277.

DISCUSSION OF RESULTS

The Abram Creek ravine, cascading waterfalls and surrounding mature Hemlock and Hardwood forest ridges deceivingly seem pristine and wild in this heavily developed area. With a maximum total of three bat encounters on July 31 and five on August 25 (some of which may have been the same individuals) the bat population at NASA Glenn Research Center is sparse.

On closer examination the water source running through it is void of life. There were no aquatic insects found when examined. Many as adults would have provided a food source for the insectivorous bats. It is possible that the lack of food, the noise from the Center's many facilities and the adjacent airport make it far less habitable for the bats than what they might find in the adjacent Rocky Fork River.

NASA personal indicated that the water quality in Abram Creek is directly related to the amount of de-icing fluid that needs to be applied to the aircraft at Cleveland Hopkins Airport during the winter. The severer the winter the farther into the summer season it takes for Abram Creek to get it all the de-icing fluid flushed out.

RECOMMENDATIONS

If this unique habitat is to become the wild oasis that it has the potential for;

1. The runoff needs to be cleaned or diverted.
2. Noise levels reduced whenever possible.
3. Leave the forest as is, keeping exfoliating, dead and hollow trees intact.
4. Let areas not used "grow wild".

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